Determinants and Effects of Naturalization. The Role of Dual Citizenship Laws.

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Abstract

This paper investigates how immigrants in the United States respond to changes in dual citizenship laws in their origin country. In the 1990s Colombia, the Dominican Republic, Ecuador, Costa Rica and Brazil revoked the previous rule that took away nationality of the origin country from those who became citizens of another country. Using data from the 1990 and 2000 censuses, I find a sizable and statistically significant effect of granting dual citizenship on the probability of naturalization in regressions that include controls for other factors (such as welfare reform) that changed the incentives to naturalize over the 1990s. Immigrants recently granted dual nationality rights also experience employment gains, but no earnings gains. The effects of dual citizenship on labor outcomes, when interpreted through naturalization, are consistent with American citizenship providing greater employment opportunities, and a more rapid wage growth that might not have shown its effects yet among recently naturalized immigrants.

1 Introduction

In the 1990s the number of naturalized citizens in the United States rose for the first time in decades, from 6.5 million in 1990 to 7.5 million in the mid-1990s to over 11 million citizens by 2002 (Fix et al. (2003)). This is not only the mechanical result of high levels of immigration during the 1980s and 1990s. Naturalization rates among eligible populations have risen as well: the

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share of legal immigrants who had naturalized rose from 39 percent in 1996 to 49 percent in 2002 (Figure 1). These trends in naturalizations and the continuing high levels of legal immigration make it increasingly important that we understand the determinants and consequences of naturalization.

A large amount of research, mostly outside of economics, has documented a positive association between citizenship and immigrants' levels of formal education, occupational status and family income. Cross-sectional evidence suggests that naturalized citizens experience better labor outcomes than non-citizens even after controlling for years since migration. Immigrants who meet the admission, age and residency requirements for naturalization decide whether or not to apply for citizenship, however, so there could be selection effects that hinder a causal interpretation of cross-sectional evidence. A long-term commitment to residence in the United States may explain both the decision to naturalize and higher wages, due to an investment in U.S.-specific human capital that predates the acquisition of citizenship. Immigrants who naturalize may also have different unmeasured productivity than immigrants who do not naturalize.

On the other hand, for economic, social and psychological reasons, there could be causal effects of citizenship on immigrants' labor outcomes. First, citizenship may provide greater employment opportunities. Not only is citizenship required for certain jobs in the United States (for example, in many federal agencies and in the public safety industry), but also the act of naturalization may remove employment barriers other than those stated by the law. Discrimination by employers or a concern that non-citizens are less committed to the job and more likely to return to their home country might cause naturalized citizens to be preferred in the hiring process over non-citizens. Second, the benefits of citizenship include eligibility for various fellowships and educational programs, so that naturalization may influence employment opportunities and earnings through education. Also, because naturalized citizens gain some selected rights –such as the chance to influence the political outcomes by casting their vote or by running for political offices, full access to public benefits, the right to residential security– their self-esteem may rise and they may feel increased pressure to succeed and more motivation to acquire additional skills valued in the U.S. labor market. So citizenship may foster the development of skills that increase productivity.

In order to explore the causal effect of naturalization, I use presumably exogenous variation in naturalization rates among immigrants residing in the United States caused by the fact that some important sending countries (Colombia, the Dominican Republic, Ecuador, Costa Rica and Brazil) changed their laws to permit dual citizenship during the 1990s. A utility

maximizing framework predicts that, everything else being equal, immigrants coming from a country that has recently allowed dual citizenship should be more likely to naturalize because of the decrease in a major cost of naturalization, specifically the need to forfeit rights in the country of origin. This cost is plausibly not related to unmeasured productivity characteristics in the U.S. labor market. If this is true, it is possible to interpret the effects of dual citizenship on labor outcomes as evidence of the causal effects of naturalization.

First, to assess the effects of the recognition of dual citizenship on the propensity to naturalize I use data from the 1990 and 2000 censuses to compare the change over time in naturalization rates of immigrants coming from countries that newly allowed dual citizenship to the change over time in naturalization rates of immigrants from Latin-American countries that did not change the law. The critical assumption of this strategy is that in the 1990s changes in dual citizenship policies are the only source of systematic differences in the incentive to naturalize *by origin country*. The advantage of using individual-level data as opposed to administrative data is that I can specify a model for the probability of citizenship in which this assumption is likely to hold. In particular, allowing the effects of socio-demographic characteristics to differ over time reduces the likelihood that other factors affecting the incentive to naturalize in the 1990s (such as welfare reform) are systematically related to country of origin.

After showing that the estimation results provide strong support that changes in dual citizenship laws are correlated with naturalization, I estimate the relationship between dual nationality rights and labor outcomes. The inclusion of socio-demographic characteristics and state of residence by year effects controls for changing local labor market conditions and changing returns to skills over the 1990s. In these specifications dummies for country of origin by year should not pick up any of these confounding effects. Immigrants from countries that newly granted dual citizenship are found to experience employment gains in 2000 relative to immigrants from other countries. They do not experience earnings gains, however. On the contrary, they are estimated to earn relatively less from self-employment activities than other immigrants. Higher employment among immigrants recently granted dual citizenship rights is consistent with naturalization providing greater employment opportunities. The findings of no earnings improvements are puzzling in light of evidence of higher employment. One possible explanation for these results is that naturalization leads to more rapid wage growth rather than a one-time boost in pay, as shown to be the case for young male immigrants by Bratsberg et al. (2002). Wage growth might just have begun, or the costs of

starting a new business might still be high relative to revenues for recently naturalized immigrants.

The remainder of the paper is organized as follows. Section 2 illustrates the estimation issues involved in a regression for the returns to naturalization and discusses the role of dual citizenship rights both for the understanding of the decision to naturalize and for the identification of the effects of naturalization. It also provides some details on the practice of dual nationality in the United States and briefly describes recognition of dual nationality by the countries that are the focus of the paper. Section 3 presents the data drawn from the 1990 and 2000 censuses and the sample restrictions. Section 4 reviews other factors besides changes in dual citizenship laws that could explain naturalization trends in the United States in the 1990s and then presents estimation results for the relationship between naturalization and dual citizenship. Section 5 discusses reduced form estimates of the effects of dual citizenship on labor outcomes and Section 6 concludes.

2 Background

For labor outcome variables such as employment or wages, consider the generic estimating equation

$$Outcome_{ijt} = \alpha + C_j + Y_t + \gamma N_{it} + x_{it}\beta + v_{ijt} \tag{1}$$

for a foreign-born individual i from country j observed in year t, where C_j and Y_t are country of origin and year fixed-effects, N_{it} is an indicator of whether or not the individual is a naturalized citizen and x_{it} is a row vector of exogenous explanatory variables. Ordinary Least Squares (OLS) applied to (1) may lead to biased estimates of γ (the return to naturalization). The reason is that citizenship status is determined by individual choices.

A model for the decision to naturalize

Under U.S. immigration law, immigrants granted legal permanent residence (holding a "green card") are eligible to naturalize once they are at least 18 years old[1] and have continuously resided in the United States for 5 years (3 years in the case of spouses of U.S. citizens). In the utility maximizing framework, immigrants who fulfill the requirements to naturalize decide to apply for citizenship if the benefits exceed the costs. Citizenship grants immigrants certain political and social rights to which permanent residents are

[1] Children residing in the U.S. can naturalize with their parents.

not entitled, such as the ability to vote, and therefore to influence political decisions and outcomes. The importance of citizenship has risen since the mid-1990s, when welfare and illegal immigration reform based access to public benefits and selected rights increasingly on citizenship.[2] Citizenship also makes it easier to sponsor relatives[3] and may provide greater employment opportunities.

There are also costs to citizenship. There are costs related to the naturalization process: to naturalize, applicants must pay a fee,[4] demonstrate the ability to read, write, speak, and understand English, and pass an examination on U.S. government and history. Some immigrants can find the naturalization procedures too complex or be afraid to fail to pass the examination.[5] In addition, depending on the dual citizenship laws in the country of origin, those who naturalize in the U.S. can be obliged to forfeit rights in the home country.

The net value of citizenship varies across individuals depending on the magnitude of the various costs and benefits and the weights attached to them. Citizenship status is an endogenous regressor in (1) if costs, benefits and their weights vary not only by some observable socio-demographic characteristics, but also by unobserved productivity characteristics included in the error term ν_{ijt}, such as English proficiency or test-taking skills. Employment preferences might also play a role. If immigrants with strong preferences for lines of work where the advantages of citizenship are greater (such as jobs in the public sector or jobs in which international travel is required) naturalize more, then the OLS estimated returns to naturalization would be upward

[2]Prior to welfare reform, legal immigrants living in the United States were eligible for public benefits on more or less the same terms as citizens. The welfare legislation passed in 1996 (Personal Responsibility and Work Opportunity Reconciliation Act) restricted foreign-born eligibility for a wide range of public programs, with all restrictions on welfare use by foreign-born persons lifted once an immigrant becomes a naturalized citizen. A consequence of the illegal immigration reform (Illegal Immigration and Immigrant Responsibility Act) is that only foreign-born people who naturalized are granted the right to "residential security", *i.e.* not to be deported for minor crimes or misdemeanors.

[3]First, becoming a citizen moves an immigrant's immediate relatives up in the queue to get a green card, because immediate relatives of U.S. citizens are not subject to immigrant quotas. Second, a citizen can sponsor not only his/her spouse and unmarried children of any age, as legal permanent residents are allowed to, but also his/her married children of any age, siblings and parents, which permanent residents are not allowed to do.

[4]The current fee for processing a naturalization application (Form N-400) is 320$. There is also an additional fee of 50$ for fingerprinting.

[5]A significant proportion of petitions for naturalization are denied. For example, in fiscal year 1996 the number of petitions for naturalization denied (229,842) are as high as 17% of the number of petitions filed in the same year (1,277,403), and 23% of the number of petitions filed in the previous year (959,963).

biased.

On longitudinal data that include information on year of naturalization, it is possible to estimate the effects of naturalization on labor outcomes since the act of naturalization occurs, and control for individual fixed-effects and wage growth that happens before naturalization (consistent with investments that predate the citizenship acquisition). Unfortunately there is a limited availability of longitudinal datasets suitable for this analysis. The only longitudinal study in the literature provides evidence that naturalization does facilitate assimilation into the U.S. labor market, primarily through the removal of employment barriers: Bratsberg et al. (2002) find that, following naturalization, young male immigrants gain access to public-sector, white-collar and union jobs, and wage growth accelerates. Given the small size of the sample from which these results are drawn from, it is important to investigate alternative ways to test the robustness of this result.

A way to identify the causal relationship of citizenship status on immigrants' labor outcomes on cross-sectional data is to find a variable that affects the naturalization decision but not the labor outcome-determination process. I propose changes in dual citizenship laws as such a variable. Everything else being equal, immigrants coming from a country that has recently allowed dual citizenship should be more likely to naturalize because of the decrease in a major cost of naturalization, specifically the need to forfeit rights in the country of origin. For changes in dual citizenship laws to identify useful exogenous variation in naturalization that can be used in the study of the effects of citizenship we need to maintain the assumption that the costs of naturalization arising from the fact that an immigrant's origin country denies dual citizenship are not correlated with the unobserved productivity relevant in the U.S. labor market. There could be both mechanical and psychological costs arising from being denied dual nationality. Immigrants can be hesitant to give up the instrumental benefits of a second passport, such as the right to travel freely back and forth from the origin country without need of any special visa, the right to work in the origin country, or pension and inheritance rights. They might also be reluctant to give up the right to vote and to influence the political outcomes in the home country. Psychologically, they may wish to continue to identify themselves as citizens of their country of birth[6] and to be able to pass the nationality to their children.

In theory, a migrant's attachment to her own origin country might be either negatively or positively related to a migrant's attachment to the host

[6]This psychological cost can be increased by the formal oath of allegiance to the United States that immigrants are required to take during the naturalization ceremony.

country, depending on whether the ties with the two countries are modeled as a sum-zero game or not. Dual citizenship has been traditionally criticized and opposed in receiving countries because it has been thought to impede integration, but empirical evidence on this issue is fragmented. Recent findings on both Latin-American immigrants (Guarnizo et al. (2003)) and Chinese Americans (Lien (2005)) show that transnational activities and homeland political concern are not at odds with assimilation measures and high levels of activism in U.S. politics.

More specifically for our analysis, concerns might arise if the costs of forfeiting rights in the home country are higher for immigrants who plan to return to their country of origin. In this case, we would be worried of systematic differences in investments in human capital and in labor supply decisions that potentially stem from a higher probability to return to the home country before the retirement age. Little is known though, either conceptually or empirically, about the process guiding the outmigration decision of the foreign-born and about the effects of the reversibility of the migration decision on the performance of the foreign-born in the host country. In theory, in the presence of a positive probability of return migration, the foreign-born might experience a smaller incentive to invest in U.S.-specific human capital because of the potentially limited horizon of her working life in the host country. But the conceptual analyses of the return migration behavior available in the literature point to an offsetting mechanism that plays a role when ability or skills are transferable across countries. Borjas and Bratsberg (1996) show that if the return migration is planned as part of an optimal life-cycle residential location sequence, then it can only arise because a temporary stay in the United States increases the worker's earnings in the source country. To explain return migration, Dustmann (1996) makes the explicit assumption that the time the migrant spends working in the host country may enhance her human capital, which becomes earnings effective after re-migration.[7] Given that there is no empirical evidence either on the correlation between attachment to dual citizenship rights and probability of return migration, or on the way in which reversible migration decisions affect a migrant's productivity and labor supply decisions while in the United States, I am comfortable in keeping the assumption that the incentive to naturalize provided by granting dual citizenship rights is not correlated with unmeasured productivity characteristics.

[7]This assumption is likely to hold, for instance, if the home country is in the process of industrialization, so that knowledge about working patterns, institutional features, incentive structures, technology advancements and the language of a highly industrialized country may considerably enhance the value of the migrant for his home economy.

Changes in dual citizenship laws in the 1990s

Dual citizenship occurs when a person holds citizenship in more than one country at the same time. There are no statistical surveys of the number of dual nationals in the world or in specific countries,[8] but dual nationality is for sure a growing phenomenon, because of high levels of international migration and because in recent years several countries have amended their nationality laws to allow individuals to retain their original citizenship even when they naturalize in another country.

In this paper I focus on the six countries in Latin America that granted dual nationality in the 1990s: Colombia made this change in 1991, the Dominican Republic in 1994, Costa Rica and Ecuador in 1995, Brazil and Mexico in 1996. As documented in Jones-Correa (2001), there are differences not only in the exact timing but also in the process of recognition of dual nationality in these countries. Colombia, Ecuador and the Dominican Republic allowed it as a response to pressures from their overseas compatriots, while Brazil and Costa Rica allowed it with little concerted pressure from the immigrant community abroad.

The case of Mexico deserves some important comments. In 1996 Mexico's government passed two laws: the first of these laws, passed in the summer, recognized the right of citizens residing abroad to vote, while the second, passed in December, guaranteed the non-loss of Mexican nationality to immigrants who became naturalized U.S. citizens. The anomaly of the case of Mexico stems not only from the fact that Mexican extraterritorial citizenship was approved before the non-loss of nationality, but above all from the delayed and still only partial implementation of the laws (Martínez Saldaña and Pineda (2002)). As regards the right-to-vote abroad, there were such delays in the implementation of the reform that Mexican citizens in the U.S. could not exercise their right to vote in the 2000 Mexican presidential elections. Mexican citizens living in the U.S. and holding a valid voting card have been recently allowed to vote by mail in the upcoming 2006 presidential elections. The non-loss of nationality provision took effect in March 1998 and allowed Mexicans who had become U.S. citizens to apply for dual citizenship until March 20, 2003.[9] It was not sure what would have happened after that. Only in 2003, the Parliament extended dual citizenship rights

[8] A notable exception to the general lack of data on multiple nationality is the Canadian Census of Population (Bloemraad (2004)).

[9] Only about 67,000 Mexican nationals applied to their government for dual nationality during the initial, five-year application period, out of almost 3 million Mexican-born persons naturalized and living in the U.S. in 2000. The small number of applicants may reflect a lack of information about dual-nationality rights.

further in time. The temporary and limited nature of the dual citizenship rights granted to Mexicans suggests that immigrants from Mexico might not belong either to the treatment or control group. This is one first strong reason to drop immigrants of Mexican origin from the analysis, as I do in my preferred specifications.

There are two other countries in the world that granted dual citizenship rights in the 1990s, Italy and Hungary. However, to increase comparability between the treatment and control group the main results are presented for immigrants from Latin American countries.

As regards recognition of dual citizenship in the United States, the Immigration and Nationality Act (INA) does not define dual citizenship or take a position for or against it. The Supreme Court of the United States has stated that dual citizenship is a "status long recognized in the law" and that "a person may have and exercise rights of nationality in two countries and be subject to the responsibilities of both. The mere fact he asserts the rights of one citizenship does not without more means that he renounces the other" (*Kawakita v. United States*, 343 U.S. 717, 1952). Foreign-born people who naturalize in the United States are still required to state under oath that they are renouncing their old citizenship,[10] but there are no further steps to enforce this declaration. The united States do not require official notification that naturalized U.S. citizens have formally renounced their nationality of origin and it does not inform states of origin about the naturalizations in the United States. It is virtually impossible for a naturalized citizen to lose American citizenship by exerting her rights as a citizen of her origin country or of a third country. For example, U.S. naturalized citizens cannot be revoked citizenship for voting in foreign elections (*Afroyim v. Rusk*, 387 U.S. 253, 1967) or for moving abroad following naturalization (*Schneider v. Rusk*, 377 U.S. 163, 1964).[11]

3 Data

In this paper I use microdata from the 1990 and 2000 U.S. Census, specifically the Integrated Public Use Microsample Series (IPUMS) files (Ruggles and

[10] The oath of allegiance taken by all who become U.S. citizens begins: "I hereby declare, on oath, that I absolutely and entirely renounce and abjure all allegiance and fidelity to any foreign prince, potentate, state, or sovereignty of whom or which I have heretofore been a subject or citizen....".

[11] Both provisions are further mentioned in the 1978 Citizenship Law Amendments (Pub.L. 95-432).

Sobek (2003)). I combine the 5 percent samples with the 1 percent samples.[12] I restrict the analysis to working-age foreign-born people who were at least 18 when they arrived in the United States and who have been living in the United States for at least 5 years (3 years if married to a U.S. citizen).[13] Adulthood upon arrival in the United States is imposed to rule out cases of immigrants deriving citizenship from their parents' naturalization, because I want to focus on the voluntary decision to naturalize. Another reason to exclude childhood immigrants is that younger arrivers likely differ from older arrivers along language and other dimensions that also affect labor outcomes (Bleakley and Chin (2004)). The restriction on length of stay in the United States guarantees that legal permanent residents in the sample meet the residency requirements for naturalization included in the U.S. law. When applying these restrictions, we are left with a sample of 1,065,775 individual observations for immigrants between the ages of 21 and 65, of which 389,478 are immigrants residing in the United States in 1990 since at least 1986, and 676,297 are immigrants residing in the United States in 2000 since at least 1996. When I restrict the analysis to immigrants from Latin American countries, the sample size is 509,666 (166,362 observations from census 1990, and 343,304 observations from census 2000).

The age and residency restrictions, though, might not be sufficient to identify immigrants eligible to naturalize. Ineligible foreign-born included in census are non-immigrants and undocumented immigrants. The likelihood of including non-immigrants in the sample is reduced by the length-of-residence sample restriction[14] and, further, by limiting the analysis to Latin American immigrants.[15] The inclusion of illegal immigrants in the sample is problematic to the extent that rates of illegal immigration vary over time by country of origin. As shown in Table 1, the six Latin-American countries allowing dual citizenship in the 1990s experienced relatively large increases

[12] They are respectively 1-in-20 and 1-in-100 national random samples of the population.

[13] Information on length of residence in the United States comes from a question about when a foreign-born individual "first came to stay" (1990 census) or "first came to live" (2000 census) in the United States.

[14] This is because non-immigrant aliens usually cannot stay in the United States longer than five or six years with the same type of visa. The problem persists, though, for foreign-born individuals who entered the United States as non-immigrants and then adjusted their status to legal permanent residents while residing in the United States.

[15] Temporary admissions are much less likely among immigrants from Latin America than from the rest of the world. For example, in fiscal year 1996 people from Latin American countries represented 42% of all legal permanent residents admitted to the United States, but only 18% of the almost 2 millions non-immigrants (other than temporary visitors for pleasure or for business).

in the estimated unauthorized resident population from 1990 to 2000, and this should work against finding effects of dual citizenship laws on census data. In the empirical investigation, I address the problem of changing rates of illegal immigration by reweighing individual data on naturalization status by the inverse of the probability of legal status by country of origin and census year for those who have been in the United States for at least five years. This reweighing procedure allows to get estimates of naturalization rates among the eligible legal population. Estimates of the unauthorized immigrant population are used to define the probability of being legal, conditional on country of origin and census year from which the observation is drawn.[16] Our calculations of the probability of legal status may not be reliable in two cases: first, when involving immigrants from countries granted special temporary amnesties or Temporary Protected Status in the 1980s and 1990s (Guatemala, El Salvador, Honduras, Nicaragua); second, when involving immigrants who legalized under the 1986 Immigration Reform and Control Act (IRCA) provisions (still illegal in 1985, mostly legalized by 1990 but still ineligible to naturalize). Given that of the 2.68 million illegal aliens who applied for legal permanent status under IRCA, 75 percent were from Mexico, and another 9 percent were from El Salvador and Guatemala, I propose to drop immigrants from these countries from the analysis.

Information on citizenship comes from reported naturalization status. False reporting of citizenship has been shown to be a problem in the Consumer Population Survey (Passel and Clark (1997)), but it appears to be present in census as well. Overreporting of citizenship in CPS is found to be attributable to two groups: recent immigrants –who are excluded from our sample– and long-term immigrants from Mexico and Central America. Dropping immigrants from Mexico and other Central American countries can help limiting the extent of overreporting present in the data. Also, it must kept in mind that our results would be biased only if rates of overreporting varied by year and country of origin.

As regards labor outcomes, I consider both employment and earnings measures. Employment measures refer to the previous year, and include whether or not a foreign-born individual reports being employed for some weeks, the number of weeks he worked, and a measure of full-employment (defined as working at least 20 weeks and 15 hours usually per week). These measures of employment refer to any work for profit or for pay. Natural-

[16] Ideally, we would like this probability to be conditioned on personal characteristics too, but estimates of the illegal population by socio-demographic characteristics are not available by year and country of origin. More details on the reweighing procedure can be found in Mazzolari (April 2005).

ization might have a different effect on the probability of working as a self-employed versus working as an employee. So, regressions are also run separately for full-time self-employment and work for wages or salary (further disaggregated in work in the private and public sector).[17] Finally, I look at the relationship between naturalization and earnings. I consider both the log of the annual wage and salary income -that is, money received as an employee- and the log of the income earned from a person's own business or farm. The GDP deflator for personal consumption expenditure is used to convert nominal earnings into 1990 dollars.

The socio-demographic characteristics included in the empirical specification are state of residence, education,[18] age,[19] gender, cohort of entry in the United States.[20] Sixty-six specific countries or areas of origin are defined (twenty-two in Latin America).

Tables 2 and 3 report variable means by country/region of origin and by year or by naturalization status. Differences among immigrants from Latin American countries and from all other countries suggest that restricting the analysis to immigrants from Latin America improves the comparability between treatment and comparison group.

4 Effects of Dual Citizenship on Naturalization

4.1 A reduced-form model for naturalization

Consider the following model for the decision to naturalize:[21]

$$N_{ijt} = \alpha_1 + C_{1j} + Y_{1t} + \delta_1(\Delta DC_j Y_{1t}) + x_{it}\beta_1 + Y_{1t}x_{it}\theta_1 + \varepsilon_{ijt} \qquad (2)$$

for $t = 1990$ or 2000, or alternatively its variant:

$$N_{ijt} = \alpha_1 + C_{1j} + Y_{1t} + \sum_{j:\Delta DC_j=1} \delta_{1j} C_{1j} Y_{1t} + x_{it}\beta_1 + Y_{1t}x_{it}\theta_1 + \varepsilon_{ijt} \qquad (2')$$

[17] Workers with multiple sources of employment are classified according to the work relationship in which they spent the most time during the reference day or week of the interview.

[18] I consider 7 possible educational attainments: at most 4^{th} grade, 5^{th} to 8^{th} grade, 9^{th} to 12^{th} grade, high school degree, some college, Bachelor degree and a master or higher degree.

[19] I consider 7 age classes: less than 30, 31 to 35, 36 to 40, 41 to 45, 46 to 50, 51 to 55 and 56 to 65.

[20] I consider 9 cohort of entries in the United States: before 1965, 1965-1969, 1970-1974, 1975-1979, 1980-1981, 1982-1984, 1985-1990, 1991-1994, 1995-1997.

[21] I estimate a linear probability model (LPM) with heteroskedasticity-robust standard errors. In preliminary work, I also estimated probit models (see Mazzolari (April 2005)) and found very similar estimation results.

where ΔDC_j is a dummy for those countries that allowed dual citizenship during the 1990s, C_{1j} is a full set of country-of-origin fixed-effects, Y_{1t} is a dummy for year $t = 2000$, and x_{it} is a vector of exogenous explanatory variables (listed in section 3). The key parameters in both equations are the δ's, which are the difference-in-differences (DD) estimates of granting dual citizenship on naturalization. The inclusion of country-of-origin fixed effects controls for systematic differences in the propensity to naturalize among immigrants from different countries that are constant over time. Time effects control for changes in the propensity to naturalize over time that are common to different origin groups. The DD parameter represents the causal effect of dual citizenship on naturalization under the assumption that we are controlling for any other time-varying factors that differentially affected naturalization among immigrants from different countries along the 1990s. In the next section, I review those factors other than changes in dual citizenship laws that are likely to explain the surge in naturalizations and naturalization rates in the 1990s and I argue that including a rich set of socio-demographic characteristics (x_{it}) and allowing their effects on naturalization to vary over time ($x_{it}Y_{1t}$) successfully increase the likelihood that the DD assumption holds.

4.2 Factors influencing the propensity to naturalize in the 1990s

Annual naturalizations surged from 240,252 in 1992 to 888,788 in 2000, with a pick of 1,044,689 in 1996. Figure 2 plots the number of persons naturalized in each year over the 1990s by country or region of origin.[22] The rise in naturalizations was particularly sharp among people from Mexico, Ecuador and other Latin American countries, both those granting dual nationality in the 1990s and those keeping existing policies.

A driving factor of the surge in the number of naturalizations over the 1990s is a large increase in the number of immigrants eligible to naturalize, not only due to high levels of legal immigration in the late 1980s and early 1990s, but also to the fact that nearly all of the 2.7 million undocumented who legalized under the 1986 IRCA provisions in the late 1980s became

[22] Caution should be exercised in drawing conclusions from these data about yearly trends in naturalization given the large backlogs in naturalization applications. Backlogs began to rise significantly in the early 1990s as the number of petitions filed for naturalization exceeded the number of naturalized persons. They dramatically dropped in 1996 as a result of the program Citizenship USA, but then they exploded again in 1997 and in 1998 because of a slowdown in processing of naturalizations in 1997.

eligible for citizenship by 1994. The majority of immigrants legalizing under IRCA were Latin-Americans: 75 percent were from Mexico, 9 percent from Central America (8 percent from El Salvador and Guatemala alone), 4 percent from Caribbean countries and 3 percent from South America. One might argue that being legalized under an amnesty increases the likelihood of naturalization once the residency requirement is met, and this would imply a higher propensity to naturalize since 1994 among those ethnic groups who disproportionally legalized under IRCA.[23] Evidence from non-publicly available administrative data, though, shows that the naturalization rate of IRCA legal permanent residents is very close to that of other legal permanent residents, when controlling for country of origin and year in which permanent residence was granted (Rytina (2002)).

There are a number of other factors that can explain the rise in naturalizations in the 1990s. The Green Card Replacement Program, begun in 1992 by the Immigration and Naturalization Service (INS), required that long-term permanent residents replace their resident cards with new, more counterfeit-resistant cards. Many immigrants chose to naturalize rather than apply for new cards (U.S. Immigration and Naturalization Service (1997)). There is no clear reason for this factor to differentially affect people coming from different countries, once cohort of entry in the United States is controlled for and its effects on naturalization are allowed to be different between 1990 and 2000.

In August 1995 the INS started the program Citizenship USA, which was aimed at reducing the significant backlog of naturalization applications accumulated in INS offices. The number of petitions for naturalizations filed increased from 206,668 in 1991 to 959,963 in 1995, but INS resources to adjudicate naturalization applications did not evidently keep pace with the increase in filing given that, by summer 1995, the pending caseload was about 800,000 and waiting times in the largest offices exceeded 2 years. The goal of Citizenship USA was to reduce processing times to no more than six months. One of the reasons for the spike in the number of persons naturalized in 1996 (Figure 2) is the success of the program in reducing backlogs.[24] The key cities identified for the effort were those with the largest number of pending cases:

[23] For example, the psychological costs associated with the legalization process might increase the propensity to naturalize by amplifying the value of the rights of full membership and residential security conferred by citizenship.

[24] Processing of naturalizations slowdowned again in 1997, when 1,412,712 petitions for naturalizations were filed but only 598,225 persons were naturalized. At the end of 1997, there were more than 1 million of applications pending a decision. Backlogs began to decrease only in 1999-2001.

Chicago, Los Angeles, Miami, New York, San Francisco. Different geographical concentration of resources would explain higher naturalization rates as the result of this program among immigrant populations concentrated where the backlogs were higher. But, when controlling for place of residence and its interaction with year 2000, there should not be any scope for this campaign to differentially affect the propensity to naturalize by country of origin.[25]

Also, political events taking place in the 1990s may have led to increased naturalizations among eligible immigrants. Proposition 187 was passed in California in 1994 in an attempt to curtail social services to unauthorized immigrants, and in 1995-96 the nation was debating the virtues of restricting benefits to legal immigrants. The media and many scholars argue that Proposition 187 and a perceived anti-immigrant sentiment encouraged many immigrants to naturalize as a way to protect their rights and cast their vote against anti-immigrant legislation. If the anti-immigrant rhetoric of the early 1990s affected an immigrant's propensity to naturalize depending on the intensity of anti-immigrant campaigns in the area of residence, then this effect is controlled for by the inclusion of place of residence in equation (2). This factor could still have differential effects by country of origin if the reaction to anti-immigrant sentiments, mainly targeting illegal immigrants, were bigger among immigrant populations with high rates of unauthorized residents.

Finally, the passage of 1996 welfare reform, restricting public benefits for non-citizens, may have increased the incentive to naturalize, as a way to retain access to social programs. If citizenship were indeed sought after welfare reform to protect access to social benefits,[26] then this effect should mainly depend on place of residence (because different states implemented very different welfare reform programs) and on personal characteristics (such as education, gender, age) that predict eligibility for means-tested categorically-restricted benefits such as the ones offered by the U.S. welfare system.

To sum up, most of the factors listed in this section should not affect differentially naturalization rates by country of origin once observable socio-demographic characteristics are controlled for and their effects are allowed

[25] Borjas (2002) mentions that it is possible that the political activists who ran the Citizenship USA initiative targeted particular groups of immigrants: groups that would be the most likely to support the incumbent Democratic administration in the 1996 presidential election. If so and if partisanship was perceived to be related to country of origin, this campaign might have targeted differently immigrants coming from different countries.

[26] Fix et al. (2003) provide some evidence against the notion that the surge in naturalizations over the 1990s is a response to legislation restricting public benefits for non-citizens: recently naturalized immigrants use public benefits (except for Supplemental Security Income) at slightly lower rates than do the pool of immigrants currently eligible for naturalization.

to vary over time.

4.3 Estimation results

Tables 4 and 5 report difference-in-differences (DD) estimates of the effects of recognizing dual citizenship on the decision to naturalize. Linear probability estimates of both equations (2) and (2') are presented. Standard errors are adjusted to allow arbitrary heteroskedasticity and arbitrary correlation across observations on immigrants born in the same country. As shown in column 1 of Table 4, between 1990 and 2000 there is a rise in the naturalization rate of immigrants from the countries granting dual citizenship in the 1990s, relative to immigrants from all other countries, of 2.9 percentage points. For Latin American countries, all country-specific DD estimates are positive, and the estimated effects are large among immigrants from Colombia, Ecuador, Costa Rica, the Dominican Republic and Brazil, but smaller and imprecisely estimated for those from Mexico. This last result could be explained both by the fact that Mexico only passed a temporary and incomplete right to dual nationality, and by the confounding factor represented by the high concentration of unauthorized immigrants among Mexicans. The country-specific estimates for immigrants from Italy and Hungary are negative, against the predicted effects of dual nationality rights. This puzzling result disapperas when restricting the analysis to Eeuropean countries, showing the sensitivity of the results to the choice of the control group.

The rest of the analysis is carried by restricting the analysis to the more homogeneous group of Latin American countries. As shown in column 2 of Table 4, on this sample the one-dummy DD estimate of changes in dual citizenship laws is economically and statistically insignificant, and country-specific DD estimates are positive and significantly different from zero only for Colombia and Ecuador. Large differences between estimates obtained for long-term immigrants (very likely to be legal) versus more recent immigrants provide evidence that bias from the presence of illegal immigrants in census might be a serious concern in interpreting the results in column 2.[27] Column 3 presents results for immigrants who resided in the United States for more than 20 years. Between 1990 and 2000 there is a rise in the naturalization

[27] Long-term immigrants should be legal because they had enough time or opportunity to adjust their status. In particular, immigrants in census 2000 who entered (illegally) before 1982 should have legalized under the 1986 Immigration Reform and Control Act (IRCA) and be eligible to naturalize by the middle of the 1990s. This major amnesty suggests to split the sample between immigrants who have been living in the United States for more or less than twenty years as a way to evaluate the effects of the presence of illegal immigrants.

rate of long-term immigrants in the treatment group, relative to the comparison group, of 6.2 percentage points, or 11% of the baseline naturalization rate. The effects are positive and large among immigrants from Colombia, Ecuador, Costa Rica and Mexico, smaller in magnitude and imprecise for immigrants from the Dominican Republic and negative for those from Brazil. The case of Brazil is puzzling: I do not have an explanation for it, but I expect it to have a limited impact on the estimated coefficient of $\Delta DC_j Y_t$ because long-term immigrants are a relatively small group among those born in Brazil. Among immigrants who have resided in the United States for at most 20 years (column 4), I find a positive and statistically significant impact of dual citizenship on naturalization only among those from Colombia, but in this sample it is likely that increasing illegal rates among countries in the treatment group downward bias the estimated effects of dual citizenship.

I address the bias arising from the representation of undocumented immigrants in census data in two alternative ways. First, I drop observations for people from Mexico, the largest source country of illegal immigration. As reported in column 5 of Table 4, the effect of dual citizenship –as captured by the estimated coefficient of $\Delta DC_j Y_{1t}$– is positive, and country-specific DD estimates are positive as well, but small and imprecise for the Dominican Republic and Brazil.

Second, I run regressions on samples where individual data on the naturalization status are reweighed by the inverse of the probability of legal status by country of origin and census year. Naturalization rates calculated in these samples are proxies for naturalization rates among the *legal* foreign-born population. As shown in column 1 of Table 5, for immigrants from Costa Rica, the Dominican Republic, Brazil, Colombia and Ecuador, the DD estimates of the 1990-2000 change in the "corrected" probability of naturalization are larger, both in absolute and proportional terms, than the ones estimated on raw data. The same result holds when restricting the analysis to Latin American immigrants who have been in the United States for at most 20 years (column 2). This means that the presence of illegals in census data is a source of downward bias for the DD estimates for these countries. On the contrary, the DD effects for Mexico are still very imprecisely estimated (columns 1 through 3). As I mentioned in section 3, I do not want to stress this result because of the the fear that the probability of legal status is imprecisely estimated for Mexicans due to difficulties arising from dealing with the population that legalized under IRCA. Column 3 presents estimates of the effects on dual citizenship on the corrected probability of naturalization on a sample that drops Mexico and those countries that were granted special temporary amnesties in the 1980s and 1990s. The effects of dual citi-

zenship are positive and sizable in magnitude: between 1990 and 2000 there is a rise in the naturalization rate of immigrants from the five countries that granted dual citizenship relative to a the restricted set of other Latin American countries of 10 percentage points, or 17% of the baseline naturalization rate.

Given that our policy variation is at the country-of-origin level, I test the robustness of the results to the inclusion of other country-level regressors. The estimated effects of dual citizenship stay the same when allowing the country fixed effects to vary by socio-demographic characteristics, such as age, education and cohort of entry in the United States (results not reported). Also, the results are robust to the inclusion of controls for different "initial" conditions at the country level that might differentially affect absolute changes in naturalization rates over the 1990s. Column 4 of Table 5 shows how stable the estimates are to the inclusion of naturalization and welfare participation rates in 1990, and a measure of the outmigration rate[28].

The results are also robust to different alternative restrictions to the comparison group. First, I exclude those countries that granted dual citizenship in the 1970s and 1980s,[29] in order to avoid that lagged effects of changes in dual citizenship laws bias the results when we focus on the 1990s. Second, I restrict the comparison group respectively to countries that did or did not grant dual citizenship rights in 1990, to address the concern that other factors affecting the naturalization decision in the 1990s may have different impact on people granted or not dual citizenship rights.

A serious problem that I have not addressed so far is the potential endogeneity of changes of dual citizenship laws, that is correlation between our policy variables and unobservable determinants of naturalization that vary across countries of origin and over time. There is no direct test for it. Something I do explore are trends in naturalization rates before the passage of the laws. Table 6 presents estimates of differential changes in naturalization rates in the treatment versus the control group between 1980 and 1990. The relative increase in naturalization rates among immigrants from Costa Rica, the Dominican Republic and Colombia seems to predate the passage of dual citizenship laws. This result might be interpreted as evidence against the exogeneity assumption that must hold for a causal interpretation of the ef-

[28] Naturalization and welfare participation rates are calculated on 1990 census data. I use estimates of the outmigration rate of 1975-1974 arrivals by 1980, presented in Borjas and Bratsberg (1996).

[29] The excluded countries (and the years in which they granted dual citizenship) are: Belize (1981), El Salvador (1983), Panama (1972), Peru (1980), British West Indies (since independence 1966-1983, except Bahamas that still denies dual citizenship).

fects of dual citizenship on naturalization. However, the presence of illegal immigrants is a confounding factor in this period as well. When restricting the analysis to long-term immigrants (less likely to be illegal), immigrants from the Dominican Republic, Brazil and Colombia are found to experience relative drops in naturalization rates. Overall, I conclude that results in Table 6 do not provide conclusive evidence against the exogeneity assumption of changes in dual citizenship laws.

5 Labor Outcomes

The first three panels of Table 7 presents OLS estimates of the returns to naturalization on different labor outcomes, that is estimates of γ from equations like (1) expanded to include interactions between socio-demographic characteristics and year 2000 ($x_{it}Y_t$). As reported in panel B, in a sample of Latin American immigrants less than 65 years old who arrived in the United States at least 18 years old and stayed at least 3 to 5 years, OLS estimates show that naturalization status is associated with a 3.5 percentage points increase in the probability to work at least one week in the previous year (4.5% of the baseline employment rate) and with more than two weeks of additional work over the previous year. When focusing on a measure of full-time employment (at least 20 weeks of employment and 15 hours of usual work per week) the results are very similar. Also, employment gains are concentrated in self-employment and work in the public sector (either at the local, state or federal level). As regards earnings, naturalization status is associated with an 11% increase in annual wages and a 7% increase in annual earnings from self-employment. Comparison between panel B and panel A (reporting results from a specification that does not include controls for length of residence in the United States) shows that pay differentials between naturalized and non-naturalized immigrants only partly reflects the fact that naturalized citizens on average have spent more time in the United States than non-citizens.[30] For all the measures but one the OLS estimates are found to be stable over time, as shown by coefficients of the interaction between naturalization status and year 2000 not statistically different from zero (panel C). Only the probability to be self-employed slightly increases

[30] On 1970 census data, in his seminal paper on immigrant wage assimilation, Chiswick (1978) dismisses the naturalization effect because it falls from 15% to 7% and loses statistical significance when controlling for years since migration in the wage regression. On the contrary, on 1990 census data and 1994-1998 CPS data (augmented with a sample of natives), Bratsberg et al. (2002) find a significant naturalization premium of 6-7% when controlling for length of residence in the United States.

over time for naturalized citizens.

The last two panels of Table 7 present DD estimates of the effects of dual citizenship on labor outcomes. These are estimates of the δ's from equations (2) and (2') where the dependent variables are our measures of labor outcomes.

As shown in panel D, immigrants from those countries that granted dual citizenship during the 1990s are more likely to be employed in 2000 relative to other Latin-American immigrant groups: they experience a 3.7 percentage points increase in the probability of full-time work, they work on average almost two weeks more and in particular they are more likely to be self-employed or work for the government. As a group, they do not experience any wage gains though, and they are found to earn on average 19% less from self-employment than other immigrant groups.

An analysis of the country-specific DD estimates (Panel E) reveals that employment gains are common to all countries in the treatment group, and particularly sizable among people born in the Dominican Republic. People born in Costa Rica, the Dominican Republic and Brazil also experience wage gains, but the insignificant effect for Colombia and the negative one for Ecuador seem to dominate the aggregate effect. As regards earnings from self-employment, all immigrants in the treatment group experience large drops relative to people born in other Latin American countries.

If we interpret these results as the effects of dual citizenship rights mediated through the acquisition of naturalization, higher employment among immigrants recently allowed dual citizenship rights is consistent with naturalization providing greater employment opportunities. The findings of no earnings improvements are puzzling in light of evidence of higher employment. One possible explanation for these results, however, is that naturalization leads to higher pay primarily through more rapid wage growth rather than a one-time boost in pay, as shown to be the case for young male immigrants by Bratsberg et al. (2002). If this is the case, wage gains might not have taken place yet for *recently* naturalized immigrants, such as those responding to newly granted dual nationality rights. As regards earnings from self-employment, the costs of starting a new business might still be high relative to revenues.

The interpretation of the effects of dual citizenship on labor outcomes through naturalization is supported by the sizable positive estimated effects of dual nationality on the acquisition of citizenship in the United States. Also, our discussion in Section 2 shows that it is plausible that the mechanism through which an individual is motivated to take up U.S. citizenship in response to recently granted dual nationality rights is not systematically

related to individual unobserved productivity.

Obviously, dual nationality rights may induce behavioral changes even for those who are not motivated to naturalize at the margin. In general, integration into the United States carries a lower cost once dual nationality rights are recognized, and this might in principle promote stronger attachment to the destination country, and stimulate a wide array of US-specific investments such as in English skills, housing or human capital. We cannot separate out the effects of dual citizenship through naturalization from all the potential direct effects that might involve even those that are not motivated to take up U.S. citizenship. This is the main motivation for the fact I prefer to limit the analysis to the reduced-form effects of dual citizenship on labor outcomes and propose increased naturalization as one possible way of interpreting the results, rather than applying an instrumental variable analysis for the returns to naturalization in which dual citizenship laws are the source of identifying variation.

6 Conclusions

I find that recognition of dual nationality by some important sending countries positively affects the U.S. naturalization rate among immigrants coming from those countries. The effects are sizable in magnitude, implying an increase of 11 percentage points in the probability of naturalization over the 1990s among immigrants coming from Colombia, the Dominican Republic, Ecuador, Costa Rica and Brazil. This is a very interesting result that sheds some light in the long-standing debate on the *pros* and *cons* of dual nationality. From the point of view of receiving states, dual nationality has been traditionally criticized as an intolerable sort of political bigamy, a way of devaluing the meaning of citizenship and impede assimilation in the destination country. On the contrary, my findings support the view that dual nationality might be a means for immigrants to reconcile memberships in both their countries of residence and of origin.

I also show that immigrants coming from countries that recently allowed dual citizenship experience relative employment gains. This result, if interpreted through the effects of dual citizenship on naturalization, is consistent with naturalization removing employment barriers and facilitating the assimilation into the U.S. labor market. Unveiling the existence of a causal effect of citizenship acquisition on an immigrant's assimilation in the United States is an important policy question. If such effect does exist as it is supported by my findings, then policy makers might consider investing to

reduce the lengthening backlogs for naturalization, and introducing policies that inform immigrants of their eligibility for citizenship and programs that remove barriers to naturalization (such as language and civics classes to help immigrants pass the citizenship exam).

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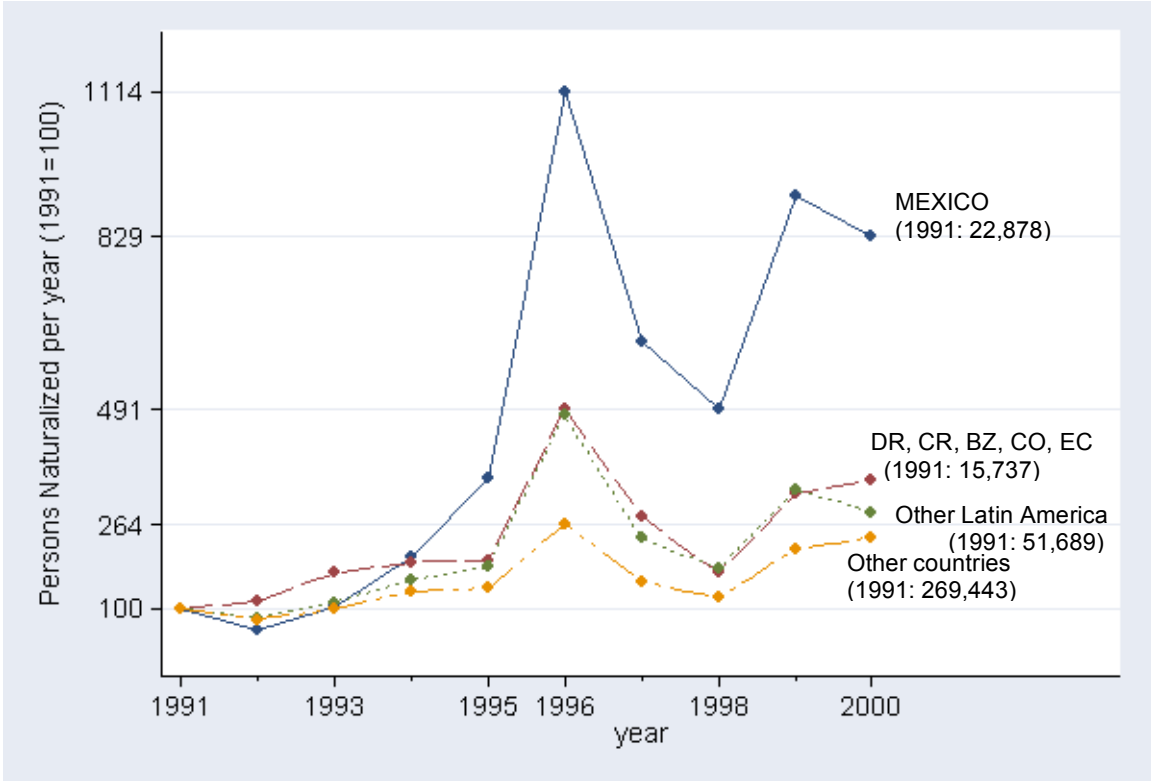
Figure 1: Number of Naturalized Citizens and Naturalization Rate, 1970-2002

Source: Fig.1, Fix, Passel and Sucher (2003): Urban Institute estimates on Census and CPS data

Figure 2: Naturalizations per year by Region/Country of Birth, 1991-2001



Source: U.S. Immigration and Naturalization Service, 2001 Statistical Yearbook

Table 1
Estimated Unauthorized Resident Population *(in thousands)*

Country of origin	Unauthorized population 1990	2000	Change, 1990 to 2000 in levels	% relative to 1990
Mexico	2,040	4,808	2,768	136
CostaRica	5	17	12	240
DominicanRepublic	46	91	45	98
Brazil	20	77	57	285
Colombia	51	141	90	176
Ecuador	37	108	71	192
other Central and South America	750	866	116	15
excluding El Salvador, Nicaragua Guatemala and Honduras	242	374	132	54
Canada	25	47	22	88
Europe	123	191	68	55
Asia	311	500	189	61
Africa	82	131	49	60
Oceania	10	23	13	130
All countries	3,500	7,000	3,500	100

Source: "Estimates of the Unauthorized Immigrant Population Residing in the United States: 1990 to 2000", U.S. Immigration and Naturalization Service (2003)
(http://www.uscis.gov/graphics/shared/aboutus/statistics/Ill_Report_1211.pdf)

Table 2
Selected Variable Means for Foreign-born by Region or Country of origin, 1990-2000

	1990								2000							
Variable	MX	CR	DR	BZ	CO	EC	other LA	other countries	MX	CR	DR	BZ	CO	EC	other LA	other countries
Naturalized citizen	0.24	0.38	0.30	0.31	0.34	0.30	0.39	0.55	0.26	0.48	0.39	0.31	0.52	0.40	0.46	0.57
Probability legal status	0.44	0.86	0.88	0.86	0.79	0.75	0.75	0.94	0.58	0.80	0.90	0.59	0.77	0.71	0.80	0.95
Naturalized citizen / probability legal status	0.57	0.44	0.34	0.36	0.43	0.40	0.55	0.58	0.45	0.59	0.43	0.53	0.68	0.56	0.56	0.60
entered in the U.S.																
before 1965	0.12	0.20	0.10	0.18	0.11	0.14	0.13	0.21	0.03	0.08	0.03	0.03	0.04	0.04	0.03	0.06
1965-1969	0.10	0.16	0.14	0.14	0.15	0.19	0.15	0.12	0.04	0.10	0.05	0.05	0.08	0.08	0.06	0.06
1970-1974	0.20	0.22	0.16	0.13	0.19	0.23	0.16	0.15	0.09	0.11	0.06	0.04	0.10	0.10	0.08	0.09
1975-1979	0.27	0.14	0.21	0.16	0.17	0.17	0.17	0.22	0.13	0.10	0.10	0.05	0.10	0.08	0.10	0.13
1980-1981	0.16	0.13	0.17	0.14	0.19	0.13	0.23	0.13	0.07	0.08	0.08	0.04	0.10	0.07	0.12	0.08
1982-1984	0.14	0.12	0.21	0.22	0.16	0.13	0.16	0.15	0.08	0.08	0.11	0.08	0.10	0.08	0.10	0.09
1985-1990	0.01	0.02	0.01	0.04	0.02	0.02	0.01	0.02	0.34	0.25	0.32	0.40	0.30	0.29	0.32	0.26
1991-1994	-	-	-	-	-	-	-	-	0.22	0.19	0.24	0.28	0.17	0.25	0.18	0.21
1995-1997	-	-	-	-	-	-	-	-	0.01	0.02	0.01	0.03	0.01	0.01	0.01	0.01
Female	0.46	0.57	0.57	0.58	0.56	0.54	0.53	0.54	0.46	0.57	0.55	0.57	0.57	0.48	0.52	0.53
Age	41.38	44.32	42.74	43.25	43.48	44.22	44.72	45.82	41.37	45.48	43.90	42.03	45.64	43.72	44.86	46.41
Education																
at most 4th grade	0.32	0.05	0.15	0.06	0.06	0.06	0.09	0.06	0.22	0.04	0.10	0.03	0.05	0.05	0.09	0.04
5th to 8th grade	0.33	0.15	0.26	0.06	0.09	0.13	0.16	0.08	0.32	0.12	0.21	0.05	0.09	0.16	0.14	0.05
9th to 12th grade	0.16	0.19	0.22	0.10	0.20	0.23	0.20	0.11	0.20	0.16	0.24	0.11	0.16	0.19	0.20	0.10
High School	0.09	0.25	0.19	0.23	0.27	0.27	0.22	0.20	0.14	0.26	0.20	0.25	0.28	0.27	0.23	0.19
Some College	0.05	0.18	0.09	0.19	0.17	0.16	0.14	0.14	0.07	0.19	0.13	0.19	0.19	0.18	0.15	0.15
Bachelors	0.03	0.14	0.07	0.24	0.15	0.12	0.14	0.25	0.04	0.15	0.08	0.24	0.17	0.11	0.13	0.29
Masters	0.01	0.04	0.02	0.12	0.06	0.04	0.06	0.15	0.02	0.06	0.04	0.13	0.08	0.04	0.05	0.18
State of residence																
California	0.56	0.31	0.01	0.19	0.11	0.16	0.22	0.31	0.49	0.22	0.01	0.13	0.08	0.08	0.22	0.31
Florida	0.01	0.16	0.08	0.12	0.25	0.09	0.31	0.05	0.02	0.21	0.10	0.22	0.29	0.10	0.26	0.05
Illinois	0.06	0.02	0.00	0.03	0.02	0.04	0.02	0.05	0.06	0.01	0.00	0.01	0.02	0.04	0.01	0.05
NewJersey	0.00	0.09	0.12	0.13	0.15	0.14	0.07	0.06	0.01	0.14	0.14	0.12	0.16	0.20	0.07	0.06
NewYork	0.01	0.17	0.68	0.17	0.29	0.45	0.20	0.13	0.01	0.13	0.58	0.12	0.24	0.47	0.20	0.13
Texas	0.25	0.05	0.00	0.05	0.04	0.02	0.04	0.05	0.20	0.05	0.01	0.03	0.04	0.01	0.04	0.05
other state	0.12	0.19	0.11	0.31	0.14	0.10	0.14	0.35	0.21	0.24	0.16	0.37	0.18	0.10	0.19	0.36
Number of observations	80,347	961	6,322	1,348	6,942	3,275	67,167	223,116	184,731	1,471	16,390	3,867	11,612	6,749	118,484	332,993

Restrictions. Foreign-born individuals less than 65 years old who arrived in the U.S at least 18 and who have resided in the U.S. at least 3 to 5 years.
Notes. To save space, variables means are calculated not for all the variables and/or categories considered in the empirical specification. In particular, in the regression analysis 68 separate country/area of origin are defined, all 50 States are separately identified and age is identified by 7 classes.
Sources. Census 1990 (1% and 5%) and Census 2000 (1% and 5%)

Table 3
Selected Variable Means for Foreign-born by Region or Country of origin and Naturalization Status

	Noncitizens								Naturalized							
Variable	MX	CR	DR	BZ	CO	EC	other LA	other countries	MX	CR	DR	BZ	CO	EC	other LA	other countries
Employed (1 week +)	0.72	0.74	0.67	0.79	0.78	0.77	0.79	0.76	0.74	0.76	0.70	0.79	0.80	0.77	0.80	0.80
Weeks worked	30.63	33.12	29.03	35.93	34.70	34.24	35.25	35.00	32.83	35.06	31.27	35.79	36.98	34.89	37.41	37.30
20 wks + & 15 hrs/wk +																
Employed	0.62	0.66	0.57	0.72	0.69	0.69	0.70	0.69	0.66	0.68	0.61	0.71	0.73	0.69	0.74	0.73
Self-employed	0.05	0.08	0.06	0.16	0.10	0.06	0.08	0.11	0.07	0.08	0.06	0.12	0.11	0.07	0.08	0.13
Private Employee	0.63	0.60	0.56	0.57	0.63	0.66	0.65	0.58	0.61	0.54	0.54	0.56	0.61	0.60	0.60	0.56
Public Employee	0.03	0.05	0.04	0.06	0.05	0.03	0.05	0.06	0.06	0.12	0.08	0.09	0.08	0.09	0.12	0.10
Income																
self-employment	8.79	8.82	8.83	9.07	8.86	8.93	8.92	9.23	8.96	9.07	8.98	9.19	9.10	9.10	9.09	9.38
wages and salaries	9.18	9.50	9.21	9.66	9.43	9.41	9.39	9.78	9.37	9.67	9.46	9.78	9.69	9.62	9.72	9.93
welfare	7.63	8.06	7.85	7.92	7.83	7.78	7.72	8.08	7.68	7.57	7.86	7.54	7.68	7.74	7.67	7.98
entered in the U.S.																
before 1965	0.04	0.07	0.03	0.03	0.03	0.04	0.03	0.07	0.10	0.21	0.09	0.14	0.11	0.13	0.13	0.17
1965-1969	0.04	0.08	0.05	0.04	0.06	0.09	0.05	0.06	0.10	0.17	0.13	0.13	0.16	0.18	0.15	0.11
1970-1974	0.11	0.14	0.07	0.05	0.10	0.11	0.08	0.08	0.17	0.17	0.13	0.09	0.17	0.19	0.16	0.14
1975-1979	0.16	0.10	0.12	0.07	0.12	0.10	0.11	0.13	0.21	0.14	0.15	0.09	0.14	0.13	0.14	0.19
1980-1981	0.10	0.11	0.11	0.07	0.15	0.09	0.17	0.11	0.11	0.09	0.09	0.07	0.11	0.09	0.14	0.09
1982-1984	0.10	0.11	0.15	0.13	0.15	0.10	0.14	0.15	0.09	0.08	0.12	0.09	0.09	0.07	0.09	0.09
1985-1990	0.26	0.20	0.24	0.32	0.22	0.23	0.25	0.19	0.18	0.11	0.22	0.28	0.17	0.15	0.15	0.14
1991-1994	0.18	0.17	0.23	0.26	0.16	0.23	0.17	0.21	0.05	0.04	0.08	0.09	0.04	0.05	0.04	0.06
1995-1997	0.01	0.02	0.01	0.03	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Female	0.46	0.55	0.54	0.56	0.55	0.47	0.50	0.54	0.47	0.60	0.59	0.62	0.58	0.55	0.55	0.54
Age	40.14	42.09	42.38	40.65	42.41	41.56	42.04	43.47	45.00	48.79	45.64	46.06	47.72	47.91	48.45	48.28
Education																
at most 4th grade	0.26	0.05	0.14	0.04	0.07	0.06	0.12	0.07	0.22	0.04	0.07	0.03	0.04	0.03	0.05	0.04
5th to 8th grade	0.33	0.15	0.25	0.06	0.11	0.17	0.19	0.07	0.30	0.11	0.18	0.04	0.07	0.10	0.10	0.06
9th to 12th grade	0.19	0.18	0.25	0.11	0.19	0.22	0.22	0.11	0.19	0.15	0.21	0.10	0.15	0.18	0.18	0.10
High School	0.12	0.25	0.18	0.25	0.28	0.26	0.21	0.20	0.14	0.26	0.23	0.24	0.27	0.28	0.24	0.19
Some College	0.05	0.17	0.10	0.18	0.16	0.16	0.12	0.14	0.08	0.21	0.15	0.22	0.20	0.20	0.18	0.15
Bachelors	0.03	0.13	0.06	0.25	0.14	0.09	0.10	0.26	0.05	0.17	0.11	0.23	0.19	0.15	0.17	0.29
Masters	0.01	0.06	0.03	0.12	0.06	0.03	0.04	0.17	0.02	0.05	0.04	0.14	0.08	0.05	0.07	0.17
Number of observations	197,586	1,370	14,372	3,583	10,089	6,359	105,604	243,251	67,492	1,062	8,340	1,632	8,465	3,665	80,047	312,858

Restrictions. Foreign-born individuals less than 65 years old who arrived in the U.S at least 18 and who have resided in the U.S. at least 3 to 5 years.
Notes. To save space, variables means are calculated not for all the variables and/or categories considered in the empirical specification. In particular, in the regression analysis 68 separate country/area of origin are defined, all 50 States are separately identified and age is identified by 7 classes.
Sources. Census 1990 (1% and 5%) and Census 2000 (1% and 5%)

Table 4
Difference in Differences for Naturalization Status

Sample Dependent var.: citizenship status	All countries (1)	Latin America (2)	Latin America 20+ yrs in U.S. (3)	Latin America 20- yrs in U.S. (4)	Latin America exclude Mexico (5)
Mean	0.45	0.33	0.56	0.25	0.42
ΔDual * year 2000	0.029*	0.011	0.062***	-0.002	0.043*
	[0.017]	[0.017]	[0.019]	[0.018]	[0.024]
Mexico * year 2000	0.016	-0.010	0.059***	-0.022	-
	[0.016]	[0.011]	[0.019]	[0.017]	
Costa Rica * year 2000	0.077***	0.019	0.062***	-0.006	0.031***
	[0.013]	[0.017]	[0.012]	[0.014]	[0.008]
Dominican Rep. * year 2000	0.061***	0.013	0.024	0.005	0.001
	[0.017]	[0.017]	[0.019]	[0.020]	[0.016]
Brazil * year 2000	0.041***	-0.001	-0.075***	0.021	0.013
	[0.012]	[0.021]	[0.012]	[0.015]	[0.015]
Colombia * year 2000	0.128***	0.084***	0.109***	0.069***	0.084***
	[0.013]	[0.014]	[0.011]	[0.015]	[0.011]
Ecuador * year 2000	0.108***	0.042**	0.096***	0.018	0.056***
	[0.015]	[0.016]	[0.014]	[0.016]	[0.012]
Italy * year 2000	-0.049***	-			
	[0.017]				
Hungary * year 2000	-0.065***	-			
	[0.022]				
Observations	1,065,775	509,666	136,286	373,380	244,588
R-squared	0.26	0.20	0.17	0.12	0.24

Notes: Robust s.e. (clustered by country of origin) in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1990 and 2000 IPUMS, arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. *ΔDual=1* for immigrants born in Mexico, Costa Rica, Dominican Republic, Brazil, Colombia, Ecuador, Italy or Hungary. All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies, a dummy for year 2000 and interaction terms (between year 2000 and state of residence, education, age, gender, cohort of entry, plus year by state by education controls).

Table 5
DD for Naturalization Status; Dependent Variable Reweighted by Probability of Legal Status

Sample	Latin America	Latin America 20- yrs in U.S.	Latin America; exclude Mexico, El Salvaldor, Guatemala, Honduras. & Nicaragua	
Dependent var.: citizenship status divided by probability to be legal	(1)	(2)	(3)	(4)
Mean	0.51	0.40	0.57	0.57
ΔDual * year 2000	0.103	0.081	0.105***	0.108***
	[0.079]	[0.083]	[0.035]	[0.024]
Mexico * year 2000	0.044	0.027	-	-
	[0.103]	[0.107]		
Costa Rica * year 2000	0.183***	0.158**	0.098***	0.084***
	[0.065]	[0.067]	[0.008]	[0.012]
Dominican Rep. * year 2000	0.108*	0.103*	0.013	-0.004
	[0.053]	[0.059]	[0.011]	[0.020]
Brazil * year 2000	0.297***	0.274***	0.196***	0.200***
	[0.060]	[0.061]	[0.010]	[0.010]
Colombia * year 2000	0.228***	0.205***	0.150***	0.132***
	[0.051]	[0.055]	[0.006]	[0.012]
Ecuador * year 2000	0.229***	0.189***	0.142***	0.115***
	[0.059]	[0.064]	[0.007]	[0.016]
Country level controls	NO	NO	NO	YES
Observations	509,666	373,380	188,758	188,758
R-squared	0.13	0.08	0.21	0.21

Notes: Robust s.e. (clustered by country of origin) in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1990 and 2000 IPUMS, arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. *ΔDual=1* for immigrants born in Mexico, Costa Rica, Dominican Republic, Brazil, Colombia or Ecuador. All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies, a dummy for year 2000 and interaction terms (between year 2000 and state of residence, education, age, gender, cohort of entry, plus year by state by education controls). The specification in column 4 also includes naturalization and welfare participation rates in 1990 and a measure of outmigration by country of origin.

Table 6
Placebo regressions: 1980-1990 Relative Change in Naturalization Rates

Sample	Latin America	Latin America 20+ yrs in U.S.	Latin America exclude Mexico
Dependent var.: citizenship status	(1)	(2)	(3)
ΔDual * year 1990	0.012	-0.014	0.019
	[0.011]	[0.026]	[0.015]
Mexico * year 1990	0.001	0.008	-
	[0.012]	[0.030]	-
Costa Rica * year 1990	0.053***	0.068***	0.041***
	[0.008]	[0.015]	[0.006]
Dominican Rep. * year 1990	0.017*	-0.097***	0.016
	[0.009]	[0.016]	[0.011]
Brazil * year 1990	-0.044***	-0.101***	-0.040***
	[0.008]	[0.014]	[0.007]
Colombia * year 1990	0.050***	0.046***	0.046***
	[0.006]	[0.013]	[0.007]
Ecuador * year 1990	-0.000	-0.127***	-0.012
	[0.009]	[0.018]	[0.008]
Observations	257,176	55,222	138,028
R-squared	0.16	0.18	0.21

Notes: Robust s.e. (clustered by country of origin) in brackets. * denotes statistical significance at the 90% level of confidence, ** 95%, *** 99%. Sample: 1980 and 1990 IPUMS, arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. *ΔDual=1* for immigrants born in Mexico, Costa Rica, Dominican Republic, Brazil, Colombia or Ecuador. All specifications include state of residence, education, age, gender, cohort of entry in the U.S., country-of-birth dummies, a dummy for year 2000 and interaction terms (between year 2000 and state of residence, education, age, gender, cohort of entry, plus year by state by education controls).

Table 7
Effects of Naturalization on Labor Outcomes – Latin America, Exclude Mexico

Dependent variable:	Employed at least one week	Weeks worked	Employed	Self- empl	Private empl.	Public empl.	Log Annual Wages	Log Annual Self-empl. Earnings
			At least 20 weeks per year and 15 hours per week					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean	0.78	35.45	0.70	0.08	0.60	0.07	9.51	8.98
A. OLS, No controls for length of residence in the U.S.								
Naturalized	0.030***	2.150***	0.038***	-0.002	-0.004	0.036***	0.188***	0.126***
	[0.004]	[0.211]	[0.004]	[0.002]	[0.004]	[0.003]	[0.013]	[0.015]
B. OLS, Add controls for length of residence in the U.S.								
Naturalized	0.035***	2.262***	0.041***	0.003*	0.005	0.033***	0.137***	0.068***
	[0.005]	[0.281]	[0.006]	[0.001]	[0.005]	[0.003]	[0.010]	[0.019]
C. OLS, Allow different returns to naturalization over time								
Naturalized	0.035***	2.226***	0.041***	0.001	0.000	0.034***	0.134***	0.029
	[0.011]	[0.486]	[0.011]	[0.003]	[0.011]	[0.004]	[0.018]	[0.052]
Naturalized *yr2000	0.003	0.226	0.003	0.005*	0.009	-0.000	0.006	0.060
	[0.009]	[0.364]	[0.009]	[0.003]	[0.010]	[0.003]	[0.014]	[0.059]
D. DD, one-dummy								
ΔDual *year 2000	0.033***	1.740***	0.037***	0.009**	0.017	0.007***	0.019	-0.190***
	[0.010]	[0.422]	[0.007]	[0.004]	[0.011]	[0.002]	[0.016]	[0.048]
E. DD, separate country dummies								
CR * yr00	0.017***	1.166***	0.034***	0.003	0.013**	-0.000	0.063***	-0.181***
	[0.004]	[0.251]	[0.005]	[0.002]	[0.006]	[0.002]	[0.008]	[0.038]
DR * yr00	0.061***	2.776***	0.053***	0.005	0.046***	0.010***	0.020*	-0.292***
	[0.006]	[0.297]	[0.006]	[0.003]	[0.006]	[0.003]	[0.011]	[0.046]
BZ * yr00	-0.001	1.121***	0.023***	0.040***	-0.040***	0.001	0.114***	-0.237***
	[0.004]	[0.245]	[0.004]	[0.003]	[0.005]	[0.003]	[0.011]	[0.038]
CO * yr00	0.025***	1.433***	0.031***	0.006**	0.013***	0.007***	0.011	-0.138***
	[0.003]	[0.209]	[0.004]	[0.002]	[0.004]	[0.002]	[0.010]	[0.033]
EC * yr00	0.019***	0.907***	0.025***	0.009***	0.002	0.007***	-0.021**	-0.153***
	[0.004]	[0.247]	[0.004]	[0.002]	[0.004]	[0.002]	[0.009]	[0.031]
Obs.	249,982	249,982	249,982	249,982	249,982	249,982	181,570	17,757

Notes: Robust standard errors (clustered by country of origin) in brackets. Single asterisk denotes statistical significance at the 90% level of confidence, double 95%, triple 99%. Sample is as follow: 1990 and 2000 IPUMS, arrived in the U.S. at least 18 years old and stayed for at least 5 years (3 if married to U.S. citizen), currently aged 21 to 65. ΔDual is a dummy for immigrants born in Mexico (MX), Costa Rica (CR), the Dominican Republic (DR), Brazil (BZ), Colombia (CO) or Ecuador (EC). All specifications include state of residence, education, age, gender, cohort of entry in the U.S. (except panel A), country-of-birth dummies and a dummy for year 2000. All specifications also include interactions between year 2000 and state of residence, education, age, gender, cohort of entry in the U.S. (except panel A), plus year by state by education controls.